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Typhoons on Yap

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Introduction

Typhoons are common events in the Western Caroline Islands. They are well known and a chronic threat. How do a people faced with such a recurrent threat handle the situation? How do they prepare for typhoons? What do they expect from them? What do they do until the typhoon comes? What do they do during one and afterwards?

Four typhoons struck Yap on November 2nd and 10th, December 23rd of 1947, and on January 13th of 1948. These were not the first typhoons to strike Yap, nor are they likely to be the last. They are, however, the ones I was able to observe myself. The material for this paper is based on field work on Yap which took place before, during, and after these four typhoons.

There were no deaths from any of these four typhoons, and only a very few minor injuries. Property damage, in houses and canoes demolished, was considerable, while damage to food resources was significant but not devastating. This pattern of low casualty rate, for either impact or post impact period, is characteristic of high islands in the Western Carolines which are not overpopulated with respect to food resources. Where population density is such as to press food resources, or where the island is a low atoll (perhaps five feet above sea level) the risk of devastation is much greater. The low islands can be swept by deep water so that only a very few escape, while even shallow inundation by the sea ruins vegetable foods. A further source of risk for both high and low atolls is to canoes at sea. Yap has close ties with the islands to its east and southwest and these ties depend on long overseas voyages. Typhoons and severe storms account for the loss of many sailors.

Despite the relatively low casualty rate, typhoons are classed by the Yap people themselves with disasters or catastrophes. Typhoons, epidemics, tidal waves, earthquakes and a phenomenon with which we are unfamiliar, thunder falling to the ground (which is said to be fatal for anyone in the area) are all grouped together.

Typhoons have a characteristic pattern. First, warning is always there but it is difficult to predict just how bad the typhoon will be. The sky darkens, the sea becomes angry and rises, wind velocity increases. How high the wind velocity will get, or how high the water will rise is not, however, clearly predictable. There is always hope that any given

moment is the worst and that the next period will see the storm abate. The clear warning with the slow buildup time permits certain kinds of anticipatory action. There are often two to three hours at least within which something can be done, and often more time than that. Even if the typhoon comes at night there are these warnings and, although it may be more difficult to do as much at night, it is still possible to act.

Second, the impact is not instantaneous but stretches over a period of time which may vary from one to three or four hours.

Third, the dangers are fairly clear-cut and predictable. These dangers are from flying material (coconuts, fronds, branches, etc.), collapsing houses, and rising water. Since the first danger comes from rising water and can be anticipated, canoes are the first objects of attention. They are of course quite valuable and some pains are taken to protect them. They will be taken into sheltered water or drawn far inland and protected. After this, refuge is taken inside a house. This is good protection against flying objects and falling trees. The danger from collapsing houses is actually fairly small, because of the type of construction. Yap houses consist of stout uprights set deep in the house foundation with horizontals set across them, the whole of which supports the bamboo framework of the roof. All connections are made by tying with coconut fibre cord; nails and pegs are not used. Coconut fibre cord expands when damp, and even when dry has a certain amount of "give." The house is thus far from a rigid brittle structure. I was in a number of different houses which collapsed and in each case the collapse was slow, steady, gradual. At no time was it necessary to dive for the nearest exit; instead the house slowly settled as one cord after another first stretched, creaked and groaned, and finally broke. Since the pattern of tying the horizontals to uprights involves a good deal of cord, there is enough time for all occupants to get outside. Finally, most of the houses have neither doors nor walls, so that there is no real difficulty in discovering means of egress.

If I have given the impression that typhoons on Yap are neither very dangerous nor very destructive by our standards, then I have given precisely the impression intended. Yap is not a small, low island where a rise in water level can sweep the entire population into the sea. It is a high island with good protection. It is true that waves, sometimes called tidal waves, can follow a typhoon and batter their way far inland, cutting pieces out of the island itself, drowning and devastating what they touch. But Yap is big enough so that only a small portion of the island is affected.

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On the other hand, typhoons on Yap are terrifying, and were so both to me and to the Yaps. They do destroy houses, and houses are hard to build and take much time and labor. Further, the destruction of a house on Yap, as elsewhere, means more than the mere destruction of a piece of material; it is a home and the locus of a family, and its destruction entails the drastic revision of not only habit patterns, but emotionally significant social relationships. Americans have a tendency to measure disasters in terms of figures: casualty rates and property damage costs. Perhaps these are good indices of the extent to which social relationships are upset. I only invite attention to the fact that the measure of the disaster of a typhoon on Yap is not in its casualty rate, which is low or non-existent, but rather in terms of the disruption of social and emotional relationships which it entails.

Social History of Typhoons on Yap

A few words might be in order now as to the social history of a typhoon from the time the warning comes—an ambiguous warning it always is, for it is difficult to tell how bad it will get.

When the warnings are fairly clear and the probability is that it is not just a bad storm, the village chief will usually instruct the magician or magicians available to go to the sacred places of the village to try to contact the supernaturals involved and to ask that the typhoon be halted. Such action is a public responsibility of the village chief and the village magicians. At the same time, chiefs and magicians at the district level, having more prestige and more powerful magic, will be concentrating their efforts to the same end.

At this time each individual takes what precautions he can on his own behalf. If he is very close to the beach he goes inland, for he knows the water will rise and may become dangerous. If he has any especially valued possessions, he will take these with him if he can. He will get help and bring his canoe as far inland as he can and secure it. If he is inland, he will get into his house and stay there. If, for any reason, he must be outdoors, there are certain magical manipulations available to protect himself against flying coconuts and branches. If he stays indoors, he will chew his betel and wait out the typhoon. If his house shows serious signs of giving under the stress, he will strengthen the houseposts with magic and communicate with the ancestral spirits which live under the floor, asking their aid in seeing that the house weathers the storm. He knows that he must not abandon the house. Until the house actually collapses—or is within a few feet of total collapse—he must not leave it, for if he leaves the building it will surely go down. By leaving the building he abandons his ancestral spirits, which live there too, and if he abandons them, they will abandon the house and abandon him as well. At the same time, he knows that his house and roof will protect him against wind-propelled objects.

The individual besides doing what is sensible and reasonable, like going inland and remaining indoors, making such magic as he can and asking the assistance of his ancestral spirits, also “gets religion.” He puts himself on his good behavior with respect to all rules which have any supernatural sanction behind them. It is ordinarily wrong for young men and old men to share food or drink, yet in every-

day life I found old men willing to share my food and drink. Since Yaps “drink a cigarette,” where we “smoke a cigarette,” cigarette smoking ordinarily falls within the prohibition, but on ordinary days old men would explain that it was not a breach of regulations to take a cigarette out of my pack since I was not a Yap. But during typhoons, while I found old men as willing as ever to smoke my cigarettes, I had to give them a whole unopened pack and a whole unused pack of matches. They would not share a light or a cigarette at that time.

After the typhoon, too, there will be visits by the magicians to the sacred place and prayer to prevent further typhoons. Each village will also be represented at the district sacred place, and one particular sacred place, which may be especially powerful, will have representatives from the whole island to ask that its magician implore the spirits to cease and desist from further events of this sort.

During the typhoons the gusts of wind, the shaking of a house, or any sudden activity will elicit the characteristic Yap “startle” reaction. This is very much the same sort of reaction observed in combat casualties during the war. The sudden gasp or exclamation with a kind of pulling together or closing into one’s shell which lasts just an instant or two but leaves the person in a state of apprehension. The significant difference between combat casualties and Yaps, however, is that the startle reaction is both normal and universal for the Yaps. Any sudden action at any time—during the normal daily routine—will elicit this startle, from adults and children alike. It is perhaps most closely akin to our stereotyped “Oops” on losing balance or slipping or falling. Yaps slip or fall without exclamations, but any sudden event will make them cry out “Ehh.”

After the typhoon is over there may be some slight attempt to pick up the debris around the house, to visit close kinsmen in other houses and see how they fared, or just simply to get reorganized—cooking food, getting “kinks” out of one’s legs, and so on. If the house has gone down, there will be a few simple salvage and shelter problems. Valuables inside the collapsed house will be dug out, assembled and put in some safe place. But Yap people don’t break out into highly purposeful, coordinate efforts at reconstruction at high rates of activity. There is a lot of sitting around and talking, of moving in apparently random ways, doing this, doing that, never quite finishing one job. However, such inaction cannot be interpreted as either daze or apathy, since it is the normal manner of living and housekeeping on Yap. Meals are often cooked in the morning, but often not. Food is eaten when one is hungry, not at regular meal times. Only rarely, if ever, is there any highly organized pitching in at the first possible moment to get a job done.

Similarly, although the last typhoon occurred in January, when I left at the end of June only a few houses had been rebuilt, most were still much as they were the day after they went down. But here again, this is less a sign of apathy or daze than it is of the normal Yap conception of the world and of life as lacking any time-urgency. There are only a few things on Yap which demand imperative action at a particular time. Things get done eventually and no one is ever in much of a hurry.

There is, however, one very notable reaction to the typhoons, and that is the highly vocal, clearly reiterated affirmation that there is no more food left and that starvation is their fate. During the typhoon people kept saying to me "Alas, alas! Now there will be no food! No coconut, no taro, no yams, no bananas, nothing to eat, nothing to drink." They said this to me and to each other during the typhoon and after, and they said this repeatedly to the commander of the civil administration in Yaptown. They said it so convincingly to him that he radioed Guam, and relief supplies in the form of tinned beef and gravy and rice were sent immediately and distributed to the disaster-stricken Yaps.

There are two important points here. The first is that there were really two possible foci of concern. One of these was the food resources and the other the housing situation. More than 60% of the houses were totally destroyed by the end of the typhoons, while 100% of those left standing suffered more or less serious damage—particularly to the roofing, which meant that even the standing houses were more like sieves than houses. Canoes, on the other hand, in very short supply before the typhoons, had suffered very little damage. Of the two possible bases for concern it was food, not housing, which was selected.

The second point is that the literal content of the concern over food supply was demonstrably unrealistic and grossly out of proportion to the real extent of damage and deprivation. I was very puzzled when people told me on all sides, "Alas, alas, no food," and I spent a good deal of time after each typhoon, and particularly the last one, surveying the extent of damage and destruction both to housing and food resources. I am thus in a position to say that for all practical purposes, there was *some* destruction of food resources, but there was no danger that anyone would go hungry. The really serious damage was to supplemental foods, not staples. Bananas were badly hit, but bananas play only a small part in the Yap diet. Coconuts were hit, but the shortage would not be felt for three to six months after the last typhoon. Even then, the shortage would not be too serious. Fish were disturbed, but hardly seriously, and the supply of taro was practically unaffected. The relief supplies of rice and canned beef were thus a delightful luxury which the Yaps enjoyed while they lasted, but this relief was quite unnecessary. The commanding officer who requested them took the Yaps at their word, and his belief in their sincerity was not due to misunderstanding. They really did mean it when they said that they would starve, that there was no food left, and that they had been destroyed. As sincerely as they meant it, however, it was nonetheless an unrealistic conviction on their part.

Food plays an extraordinary part in Yap culture. It is involved in and somehow pervades almost every form of activity—ceremonial and mundane. Neither a lovers' tryst nor a funeral is complete without some exchange of food; a husband's role is defined in terms of what food he should contribute to the family as is the wife's; there are special sacred places which have supernatural control over the fertility of food plants and women, and other ones for assuring the abundance of fish. Activities which we separate from eating are considered analagous to eating by the Yaps, as the previously mentioned "drinking" of the cigarette. And of

course there is a good deal of food anxiety in daily life, concern with the possible failure of food supply. Lovesickness is seen as a form of stomach trouble, for it makes for upset stomach and pains in the stomach, and so on.

It is, therefore, reasonable to expect that in a situation of stress food will be pushed to the forefront; it is involved with almost all activities. Yet this hardly explains anything; it is only a statement of a kind of statistical order—food crops up all the time, it will probably crop up here too. What is the context, what role does it play?

"Meaning" of Typhoon on Yap

In order to understand the unrealistic concern over the food supply and in order to answer the questions posed at the outset, how do a people face a chronic disaster situation, how do they "train" for it, how do they prepare for it, we must turn to another order of data. That is, simply, what does a typhoon "mean" on Yap?

Americans view typhoons, tornadoes, hurricanes as "natural" phenomena—events which have natural causes. Yaps class typhoons, epidemics, earthquakes, tidal waves, the falling of thunder to the ground, and sorcery as events which are caused by people who know how to manipulate supernatural forces. There is no need to go into a detailed discussion of Yap theology here. Suffice it to say that a magician who knows how can bring about one of these catastrophes. But a magician who knows how can never work on his own initiative except when he gets out of hand and proceeds with some piece of personal vengeance. In such a case, however, he will not bring a catastrophe, but rather will focus trouble on his particular enemy. The catastrophes—sorcery included here—are brought on by a magician when he has been ordered to do so by some chief. A chief, usually only a district chief, is only supposed to order a catastrophe when in his judgment people have deserved such serious punishment for failing to heed his advice and counsel. A typhoon is, therefore, a punishment meted out to the people by some chief whom they have neglected to heed.

This is a difficult problem. A good chief never orders—he has no authority. But he is expected to give wise counsel, and his people are supposed to recognize the wisdom of his counsel and follow it. Yet a bad chief is one who does not heed the desires or wants of his people and who works against his people, trying to make them do what he wants instead of leading them along the ways they want to go. And a bad chief can be killed by his people or, nowadays, since killing a man brings trouble from foreign authorities, a bad chief may be deposed. When a chief and his people part company, each is convinced that the other is wrong and each is convinced that right lies on his side. A chief has, by common consent, the right to punish his people for failing to "follow" him; yet his people, by common consent, have the right to take drastic measures if their chief fails to represent them and lead them as they want to be led.

The typhoon is thus not an open and shut case of clear-cut wrong and just punishment. It is a half-right measure of force and power which can overweigh the question of ethical right. The people may be right, but they would rather not

have a typhoon or epidemic than stand too firmly on those rights.

Such force at the command of a chief, if it were unlimited, would give him considerable power indeed. Particularly if he could really bring on typhoons and epidemics at will. An important balance in the system, which makes the typhoon or epidemic a measure of last resort, is that no magician can ordinarily call forth more than two disasters in his lifetime. It is only the rarest and most unusual magician who can bring on three in his lifetime, and he never knows until he tries it. But no magician in the history of Yap—I was told—had ever brought four disasters and lived. Usually if a magician brings on two disasters and then tries a third, he himself will die immediately thereafter.

Hence, any given district or alliance chief is confined by the fact that his magician can only invoke two disasters. Chiefs and magicians look forward to long lives and they are not particularly keen on bringing those lives to abrupt endings. A chief will therefore keep the disasters in reserve—he will not loose such a bolt unless it is vitally important to him, for he has not many to waste.

It is a fact that the magician who was said to have brought on the four typhoons of 1947-48 was found dead the morning after the fourth typhoon of apparently natural but undeterminable causes. There was no autopsy, but there were no visible signs of foul play.

A typhoon on Yap is, therefore, supernaturally determined, but its presence is the result of some human's action on these supernaturals.

Supernaturals being what they are, if one man can cause a typhoon, another man, approaching the supernaturals from another perspective and with his own power, can try to stop the typhoon, or minimize it, or at least protect himself. Thus the question of planning and preparation follows directly from the presumed causes. We feel that we cannot control the weather, but only what the weather does to us. We therefore build tornado cellars but make no effort to halt or deflect a tornado. On Yap it is otherwise. Since the typhoon is sent by and controlled by the actions of people on supernaturals, they get right to the heart of the matter by sending deputations to sacred places to work on the supernaturals sending the typhoons. They stay with their houses so that their ancestral ghosts will protect them and let everyone else fend for himself. A bit of magic may protect any given individual from being struck by flying materials even though other individuals have, by magic, brought the typhoon.

Correspondingly, there is a minimum—though a perceptible and significant minimum—of rational preparation. People do get away from the beaches and they do get under roofs. But they rely on magic to steady the house, when they have known for about forty years or more that ropes thrown across the top of the house and tied firmly to the ground will help considerably in keeping the house from blowing up and then down. Germans, Japanese and Americans have all used this method for keeping roofs on, and the Yaps have helped them rig these cables and have understood what they were for. Yet no Yap house to my knowledge ever had a rope thrown across its roof—or better, two to four ropes, criss-crossed, to help hold the roof down.

I should turn now to Yap behavior during the typhoon itself. In the first typhoon, which occurred about a month after I arrived and when my command of the language was almost nil, I was able to see people but not understand much of what was said. This typhoon struck at night and was over by morning. The other three typhoons occurred during the day, or partly during the day, partly during the night. In each there was that strange combination of tension without concrete or specific manifestations. In the first typhoon, I observed a young man and woman trying to get as far into a dark corner as possible and disappear beneath a collection of mats, ponchos and other coverings and, although they were quiet, it was evident that they were “necking.” Yet there was never hilarity, jokes, singing or any other kind of jollity. Mothers tended to stay with their babies and just sit, doing little things but looking drawn, tense, uncomfortable. Nobody liked the typhoons, yet there seemed to be nothing to fear. They were silent more than they talked, and when they talked they talked quietly. The Yaps described the feeling as one of confinement, boredom, strained inactivity. And my own feelings were similar; cold, discomfort, confinement, an unspecified anxiety and tenseness, yet nothing clearly to be afraid of. Yet after the typhoon there was no release, no bursting forth from the confinement as there is at other times. I have remained through long days of rain and storm on Yap and at the end, when the sun comes out and the thick heat and moisture can almost be cut with a knife, people would break out of the house and *go*. Dogs would bark. Children would shout and play. But after the typhoon, they just got up and left or aimlessly pattered, or dug in the ruins in a dispirited, listless way.

It is this context, I think, which illuminates the anxiety centered on food. I am not Yap, but there is something about the awesome activity of the elements which is fundamentally disturbing to me. It gives one pause. One feels very much cut down to size. For the Yaps, however, these feelings are much more clearly focused. Where I see the typhoon as a natural phenomenon and am reminded forcefully of the overwhelming size and strength of nature, the Yaps see the typhoon as the work of people who can control those forces. It is therefore in social relationships, backed by the conscious and unconscious interpretations which people invest in them, that the meaning and the threat of the typhoon lies. The relations between individuals, the relations between the people and their chief, the relations between the old and the young, the relations between parents and children are disturbed and this disturbance is symbolized by the very awesome experience of the typhoon. Where the *exchange* of food is the symbol of good relations, it is the absence of food which symbolizes disturbed or broken relations. And when someone has sent a typhoon, relations are not too good. Therefore, the typhoon is seen as expressing a situation of broken relations, symbolized as “no food.” It is at this level that the lament “Ah piri e gafago, dari e thamunamun” (“Ah, alas, no food”) is meant literally. It is not at the level of concrete food at all, for they will voice this lament with food in their hands.

Thus, a typhoon on Yap is the end product of a series of purposeful actions by people through their manipulation of the supernatural. The typhoon is caused as much by the dis-

turbance of social relations between the chief and the people as it is by the manipulations of the magician. The exchange of food is the symbol of good relations; the typhoon means that relations have deteriorated, and where social relations deteriorate, food is absent. Hence a typhoon means "no food" in the sense that the omnipresent symbol of good social relations is absent when relations are bad.

The impact of the typhoon thus has much wider and more important meaning than the mere velocity of the wind and its physical destruction. The impact of the typhoon is felt where it hurts most, as disturbed social relations, and it is this impact which is voiced by the lament over food. The impact of the wind and water represents significantly lesser issues. Indeed, in surveying the damage of the typhoon as measured in facts and figures of houses destroyed and casualties, one is measuring only the secondary, less important damage.

Conclusion

I opened with the question of what happens in a situation of chronic threat. I think that it is plain by now that the chronic threat of a typhoon on Yap is a situation in which the concrete, real situation has a much deeper, wider set of meanings built into it than the mere physical phenomenon itself. The typhoon is put in a causal context and becomes symbolic. It is invested with meaning and becomes the focus for a host of other, ancillary anxieties or concerns. Because of these meanings which are invested in the typhoon, the typhoon itself is only one element in the impact and the response to the physical impact is only part of the response. A significant portion—indeed, on Yap the most significant portion—of the response is not to the physical impact at all, but rather to the impact of the meanings with which it is invested.

There are certain other points which may be worth noting in comparing the Yap typhoon with, say an American tornado. One of these is the difference in the degree to which Yap and American cultures depend on material things and the variable effect of physical destruction on each. On Yap, houses that go down stay down for quite a while. Paths are only gradually cleared of debris. In America it is really difficult to say which has the greater impact, the tornado or the rescue and clean-up operations. The fury of a tornado is admittedly packed into a shorter time period than the fury of the fire trucks, ambulances, bulldozers and cranes which roar onto the scene in the wake of a tornado. I say that the tornado's fury takes less time, but there is every indication that the speed with which the rescue and clean-up operations are conducted is growing greater with each disaster. We are learning how to pack the greatest clean-up impact in the shortest possible time. Here is perhaps one clue to the very different meanings of the disaster in America and in Yap. The rescue and clean-up operations on Yap are conducted in the sacred places and in the political arena, for these areas represent the importantly dislocated relations. In the U.S., it is the order and efficiency of material apparatus which are seen as the important consequences of disaster.

A second point which suggests itself is the question of the disaster syndrome, particularly with respect to the dazed and stunned reaction which has been so prominently described in

the literature on American disasters. It might be possible to misinterpret the Yap puttering and apparently aimless reorganization of their physical community as daze and apathy. I do not think that this is so, however. In a sense the Yap is simply normally apathetic with respect to getting things done in a hurry—they just never do. My own feeling is that Yaps show neither daze nor apathy after a typhoon and that their response is nearly rational, given their premises as to the causes and primary areas of value involved in the typhoon. Thus, if typhoons are controlled by supernaturals, it is reasonable to attempt to influence these supernaturals, and if the primary area of value hit by a typhoon is the area of intergenerational relationships symbolized by political relations, then their pre- and post-typhoon behavior aimed at restoring these relations is reasonable.

The absence of apathy and daze may partly be accounted for in terms of the fact that the disaster and its meaning are more clearly structured in certain respects for the Yaps, and hence can be met in more closely rational ways, given their view of the nature of the situation. Partly too, there is less, in their view, of a highly complex nature that needs doing. Perhaps this point can be put more clearly by saying that the extraordinarily elaborate functional differentiation of roles in American culture requires a very high degree of coordination among individuals, so that any dislocation of that scheme of coordination leaves a series of individuals who simply cannot act because their acts are neither properly cued nor fitted into the reciprocal actions of others. If the definition of the role of a casualty is that he be taken by some special vehicle to proper medical quarters, then there is only a very little that a man with a broken arm can do for another man with a broken arm beyond waiting for help and an ambulance. Similarly, it is a doctor's job to fix broken people, and practicing medicine without a license or without good training in first aid is wrong. Hence people stand around and stare not only because they don't know what to do, but also because they have been trained to "not know" and to leave these things to the expert. Perhaps equally important is the impotence that may be felt by the person who sees the need for action and is nevertheless trained not to act. He must defend himself against this, and he does so by "apathy," and he looks as if he were in a "daze." On Yap there is none of this elaborate complexity of functional differentiation. What needs doing, people do. The fact that in their view hardly anything really needs doing immediately helps to prevent overwhelming necessity for action conflicting with incapacity. Finally, of course, the absence of physical shock and physical casualties makes their task much easier.

Communication, too, is very different on Yap and in the U.S. On Yap, communication is primarily by word of mouth from one person directly to another. Howling above a high wind is a perfectly adequate mode of communication on Yap. But howling through a telephone when the wires are down just doesn't work in America. Communication, and the technical aids to communication in America are geared very closely to the elaborate functional differentiation of roles. Every man is a fireman and policeman on Yap and the medical specialists take care of only severe and refractory cases that require special supernatural assistance, so that

virtually every man is his own doctor. The communication network is so much simpler on Yap that it is proportionately harder to disrupt.

Finally, let me return to the point with which I opened: what are the implications of a *chronic threat*? I would make this suggestion. Where there is a chronic threat, that threat will take on meaning far above and beyond its own real and inherent nature. The event which is threatened will have meaning in terms of causes, and all human beings are vain enough to see these causes in themselves. The unique catastrophe is very different: it is unstructured and by the time it is structured it is finished and does not occur again. But the chronic threat, the catastrophe that is long-awaited, takes on distinct meanings and provides a focus for long-standing anxieties, guilts, fears, and hostilities. One important part of the structuring of meaning is the extent to which it becomes common for the whole population. The unique catastrophe is responded to in terms of the socially structured motives of individuals. The chronic threat takes on common meanings for a wide population.

If we look forward to and plan for the thermonuclear disaster and if we look forward to it and plan for it over a

sufficient time, we must take into account in our plans more than the bare physical effects of that disaster, for by that time people will not only respond to the thermonuclear detonation itself, but they will also be responding to all the things they have projected into it and built into it in terms of their primary concerns and their primary anxieties. Indeed, their response to the physical detonation and its physical effects will be largely shaped by the meanings they impute to those physical phenomena, and not simply to the physical phenomena themselves.

I cannot say at this moment what primary concerns and anxieties Americans will manifest and thereby determine their response to a thermonuclear blast. Nor can I say just what meaning they have already given such a potential event. But I would suggest that, if the Yap data provide a valid base for generalization, it would be reasonable to expect these anxieties and concerns to follow closely the meaning they impute to such a disaster, and that the response to the disaster will be composed of the response to those meanings as well as to the actual, physical explosion; just as the disturbance of social relations is as much a part of a Yap typhoon as the wind, the rain and the water.

IV

Some Functions of Communication in Crisis Behavior

*Harry B. Williams**

We may conceive of crisis—for our purposes here—as a situation in which the actor faces the necessity of making an appropriate choice of action in order to avoid or minimize severe punishment. In this context, the function of communication is to enable the actor to make choices by providing him with information.¹ He has received information

when his perception of the number or the relative value of available choices is changed.

Our analysis of communication functions in crisis is based upon the cybernetics concept of communication. When the actor has made a choice he seeks or receives further information about the results of the choice and compares it with the desired outcome. We may call these parts of the process “feedback” and “comparison” respectively. The information which he possesses about the desired outcome and against which he compares the feedback messages about results we may call “reference messages” or “reference inputs.” This comprises the area of pre-existing information and predisposition—including values, attitudes, set, motivation, etc.—which is so important in determining the responses of human behavioral systems and in the investigation of which other theoretical frameworks may be required. After comparison of feedback and reference messages he may modify his choices or make new choices to achieve results more consonant with desired outcomes.

A classic and very simple example of this circular communication system—sometimes called a “servo system,” sometimes a “feedback control” system²—is the familiar home furnace. In the home furnace system, the thermostat compares actual room temperatures with the desired temperature fixed by the user. Finding error, it signals the furnace to turn on,

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1. This paper was prepared for oral presentation and discussion in a panel discussion and has not been rewritten for publication. Obviously, it does not contain the many qualifications and elaborations which would be made in a longer and more formal publication. Three general qualifications should be expressed here: 1) The title refers to behavior in “crisis,” but the hypotheses and examples are drawn from only one kind of crisis, sudden community disaster. It was the writer's hope that some of these points would be found to have applicability to a broader range of crisis events, but no attempt is made to establish this relationship in this paper. 2) Many of the points concern mismanagement or ineffective crisis behavior. By seeing what went wrong in a system, we are enabled to learn more about its general functions and behavior as a system. The reader should not be left with the impression, however, that these examples of malfunction represent a norm or majority of behaviors in disaster. For a proper corrective to any such impression, the reader is referred to Charles E. Fritz and Eli S. Marks, “The NORC Studies of Human Behavior in Disaster,” *The Journal of Social Issues*, Vol. X, No. 3 (1954), pp. 26-41; and Charles E. Fritz and Harry B. Williams, “The Human Being in Disaster: A Research Perspective,” *The Annals of the American Academy of Political and Social Science*, 309, January 1957, pp. 42-51. 3) The hypotheses and discussions attempt to account for selected behaviors, and for only certain aspects of these. They have no implication of theoretical exhaustiveness or of statistical normality.

2. For a good exposition see, the Editors of *Scientific American* (eds.), *Automatic Control*. New York: Simon and Schuster, 1955.